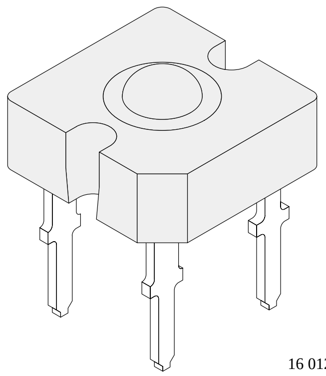
TELUX™ LED

Color	Type	Technology	Angle of Half Intensity ±φ
Red	TLWR76..	AlInGaP on GaAs	30°
Yellow	TLWY76..	AlInGaP on GaAs	
Softorange	TLWO76..	AlInGaP on GaAs	
True Green	TLWTG76..	InGaN on SiC	
Blue Green	TLWBG76..	InGaN on SiC	
Blue	TLWB76..	InGaN on SiC	
White	TLWW76..	InGaN / YAG on SiC	

Description

The TELUX™ series is a clear, non diffused LED for high end applications where supreme luminous flux is required.
It is designed in an industry standard 7.62 mm square package utilizing highly developed (AS) AlInGaP and InGaN technologies.
The supreme heat dissipation of TELUX™ allows applications at high ambient temperatures.
All packing units are binned for luminous flux and color to achieve best homogenous light appearance in application.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Features

- Utilizing (AS) AlInGaP and InGaN technologies
- High luminous flux
- Supreme heat dissipation: R_{thJP} is 90 K/W
- High operating temperature: T_j up to + 125 °C
- Type TLWR meets SAE and ECE color requirements
- Packed in tubes for automatic insertion
- Luminous flux and color categorized for each tube
- Small mechanical tolerances allow precise usage of external reflectors or lightguides
- TLWR and TLWY types additionally forward voltage categorized
- ESD–withstand voltage: > 2 kV acc. to MIL STD 883 D, Method 3015.7 for AlInGaP, > 1 kV for InGaN

Applications

Exterior lighting
Dashboard illumination
Tail–, Stop – and Turn Signals of motor vehicles
Replaces incandescant lamps
Traffic signals and signs

Absolute Maximum Ratings

T_{amb} = 25°C, unless otherwise specified

TLWR76.. ,**TLWY76..** ,**TLWO76..** ,

Parameter	Test Conditions	Type	Symbol	Value	Unit
Reverse voltage	I_R = 10μA	TLWR76.. TLWY76.. TLWO76..	V_R	10	V
DC forward current	$T_{amb} \leq 85°C$		I_F	70	mA
Surge forward current	$t_p \leq 10$ μs		I_{FSM}	1	A
Power dissipation	$T_{amb} \leq 85°C$		P_V	187	mW
Junction temperature			T_j	125	°C
Operating temperature range			T_{amb}	–40 to +110	°C
Storage temperature range			T_{stg}	–55 to +110	°C
Soldering temperature	t ≤ 5 s, 1.5 mm from body pre-heat temperature 100°C/ 30sec.		T_{sd}	260	°C
Thermal resistance junction/ambient	with cathode heatsink of 70 mm^2		R_{thJA}	200	K/W
Thermal resistance junction/pin			R_{thJP}	90	K/W

T_{amb} = 25°C, unless otherwise specified

TLWTG76.. ,**TLWBG76..** ,**TLWB76..** ,**TLWW76..** ,

Parameter	Test Conditions	Type	Symbol	Value	Unit
Reverse voltage	I_R = 10μA	TLWTG76.. TLWBG76.. TLWB76.. TLWW76..	V_R	5	V
DC forward current	$T_{amb} \leq 50°C$		I_F	50	mA
Surge forward current	$t_p \leq 10$ μs		I_{FSM}	0.1	A
Power dissipation	$T_{amb} \leq 50°C$	TLWTG76.. TLWBG76.. TLWB76..	P_V	230	mW
		TLWW76..	P_V	255	mW
Junction temperature			T_j	100	°C
Operating temperature range			T_{amb}	–40 to +100	°C
Storage temperature range			T_{stg}	–55 to +100	°C
Soldering temperature	t ≤ 5 s, 1.5 mm from body preheat temperature 100°C/30sec.		T_{sd}	260	°C
Thermal resistance junction/ambient	with cathode heatsink of 70 mm^2		R_{thJA}	200	K/W
Thermal resistance junction/pin			R_{thJP}	90	K/W

Optical and Electrical Characteristics

T_{amb} = 25°C, unless otherwise specified

Red (**TLWR76..**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Total flux	I_F = 70 mA, R_{thJA}=200 °K/W		ϕ_V	1500	2100	3000	mlm
Luminous intensity/Total flux			I_V/ϕ_V		0.8		mcd/ mlm
Dominant wavelength			λ_d	611	618	634	nm
Peak wavelength			λ_p		624		nm
Angle of half intensity			φ		±30		deg
Total included angle	90 % of Total Flux Captured		φ		75		deg
Forward voltage	I_F = 70 mA, R_{thJA}=200 °K/W		V_F	1.83	2.2	2.67	V
Reverse voltage	I_R = 10 μA		V_R	10	20		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		17		pF
Temperature coefficient of λ_{dom}	I_F = 50 mA		$TC_{\lambda dom}$		0.05		nm/K

Softorange (**TLWO76..**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Total flux	I_F = 70 mA, R_{thJA}=200 °K/W		ϕ_V	1500	2100	3000	mlm
Luminous intensity/Total flux			I_V/ϕ_V		0.8		mcd/ mlm
Dominant wavelength			λ_d	598	605	611	nm
Peak wavelength			λ_p		610		nm
Angle of half intensity			φ		±30		deg
Total included angle	90 % of Total Flux Captured		φ		75		deg
Forward voltage	I_F = 70 mA, R_{thJA}=200 °K/W		V_F	1.83	2.2	2.67	V
Reverse voltage	I_R = 10 μA		V_R	10	20		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		17		pF
Temperature coefficient of λ_{dom}	I_F = 50 mA		$TC_{\lambda dom}$		0.06		nm/K

Yellow (**TLWY76..**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Total flux	I_F = 70 mA, R_{thJA}=200 °K/W		ϕ_V	1000	1400	2400	mlm
Luminous intensity/Total flux			I_V/ϕ_V		0.8		mcd/ mlm
Dominant wavelength			λ_d	585	592	597	nm
Peak wavelength			λ_p		594		nm
Angle of half intensity			φ		±30		deg
Total included angle	90 % of Total Flux Captured		φ		75		deg
Forward voltage	I_F = 70 mA, R_{thJA}=200 °K/W		V_F	1.83	2.1	2.67	V
Reverse voltage	I_R = 10 μA		V_R	10	15		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		32		pF
Temperature coefficient of λ_{dom}	I_F = 50 mA		$TC_{\lambda dom}$		0.1		nm/K

True Green (**TLWTG76..**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Total flux	I_F = 50 mA, R_{thJA}=200 °K/W		ϕ_V	630	900	1800	mlm
Luminous intensity/Total flux			I_V/ϕ_V		0.8		mcd/ mlm
Dominant wavelength			λ_d	509	523	529	nm
Peak wavelength			λ_p		518		nm
Angle of half intensity			φ		±30		deg
Total included angle	90 % of Total Flux Captured		φ		75		deg
Forward voltage	I_F = 50 mA, R_{thJA}=200 °K/W		V_F		4.2	4.7	V
Reverse voltage	I_R = 10 µA		V_R	5	10		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		50		pF
Temperature coefficient of λ_{dom}	I_F = 30 mA		$TC_{\lambda dom}$		0.02		nm/K

Blue Green (**TLWBG76..**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Total flux	I_F = 50 mA, R_{thJA}=200 °K/W		ϕ_V	400	700	1250	mlm
Luminous intensity/Total flux			I_V/ϕ_V		0.8		mcd/ mlm
Dominant wavelength			λ_d	492	505	510	nm
Peak wavelength			λ_p		503		nm
Angle of half intensity			φ		±30		deg
Total included angle	90 % of Total Flux Captured		φ		75		deg
Forward voltage	I_F = 50 mA, R_{thJA}=200 °K/W		V_F		4.2	4.7	V
Reverse voltage	I_R = 10 µA		V_R	5	10		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		50		pF
Temperature coefficient of λ_{dom}	I_F = 30 mA		$TC_{\lambda dom}$		0.02		nm/K

Blue (**TLWB76..**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Total flux	I_F = 50 mA, R_{thJA}=200 °K/W		ϕ_V	200	330	630	mlm
Luminous intensity/Total flux			I_V/ϕ_V		0.8		mcd/ mlm
Dominant wavelength			λ_d	462	470	476	nm
Peak wavelength			λ_p		460		nm
Angle of half intensity			φ		±30		deg
Total included angle	90 % of Total Flux Captured		φ		75		deg
Forward voltage	I_F = 50 mA, R_{thJA}=200 °K/W		V_F		4.3	4.7	V
Reverse voltage	I_R = 10 µA		V_R	5	10		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		50		pF
Temperature coefficient of λ_{dom}	I_F = 30 mA		$TC_{\lambda dom}$		0.03		nm/K

White (**TLWW76..**)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Total flux			ϕ_V	400	650	1250	mlm
Luminous intensity/Total flux	I_F = 50 mA, R_{thJA}=200 °K/W		I_V/ϕ_V		0.8		mcd/ mlm
Color temperature			T_K		5500		K
Angle of half intensity			φ		±30		deg
Total included angle	90 % of Total Flux Captured		φ		75		deg
Forward voltage	I_F = 50 mA, R_{thJA}=200 °K/W		V_F		4.3	5.1	V
Reverse voltage	I_R = 10 µA		V_R	5	10		V
Junction capacitance	V_R = 0, f = 1 MHz		C_j		50		pF

Typical Characteristics (T$_{amb}$ = 25°C, unless otherwise specified)

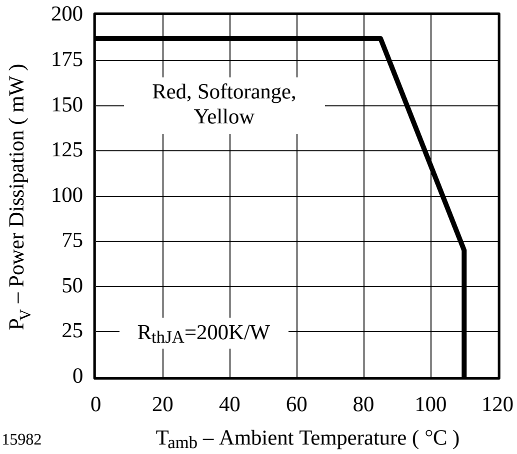


Figure 1 Power Dissipation vs. Ambient Temperature

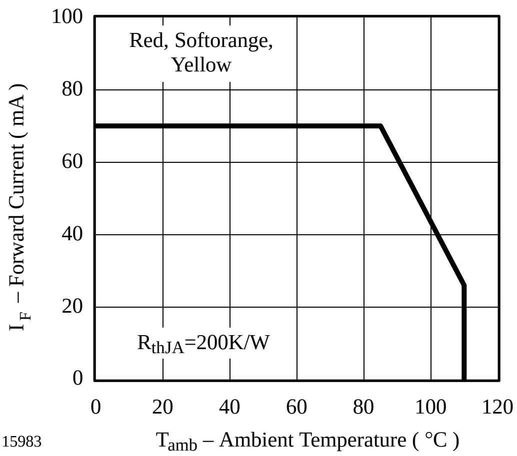


Figure 2 Forward Current vs. Ambient Temperature

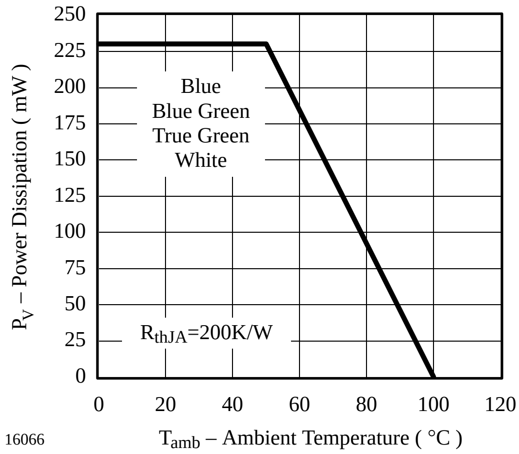


Figure 3 Power Dissipation vs. Ambient Temperature

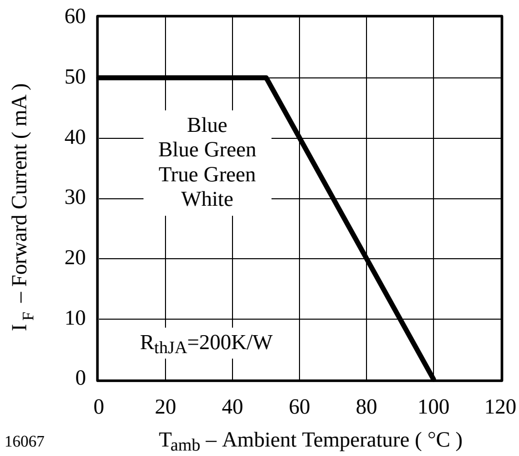


Figure 4 Forward Current vs. Ambient Temperature

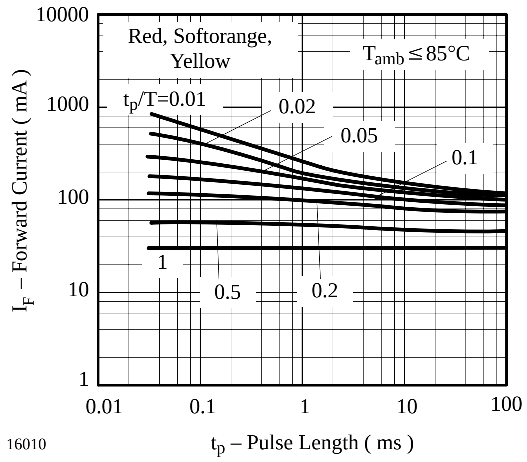


Figure 5 Forward Current vs. Pulse Length

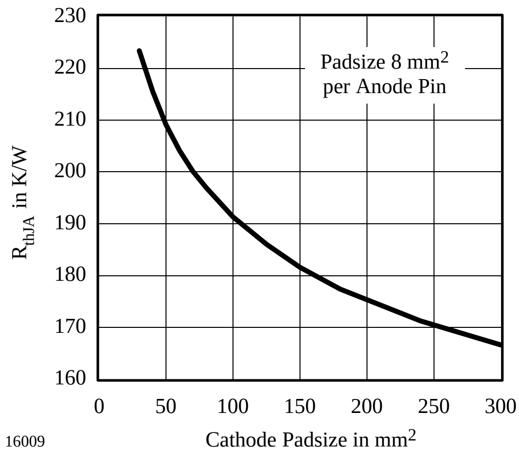


Figure 8 Thermal Resistance Junction Ambient vs. Cathode Padsize

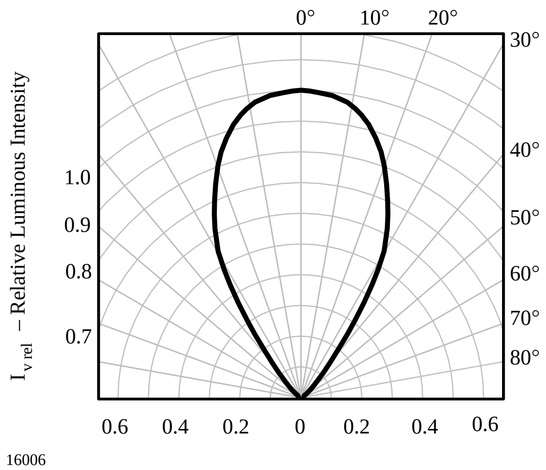


Figure 6 Rel. Luminous Intensity vs. Angular Displacement

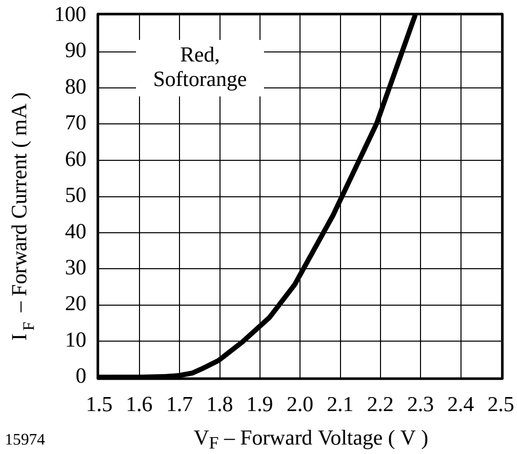


Figure 9 Forward Current vs. Forward Voltage

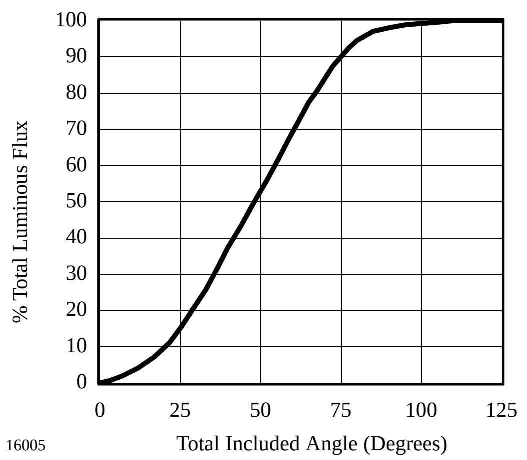


Figure 7 Percentage Total Luminous Flux vs. Total Included Angle (Degrees)

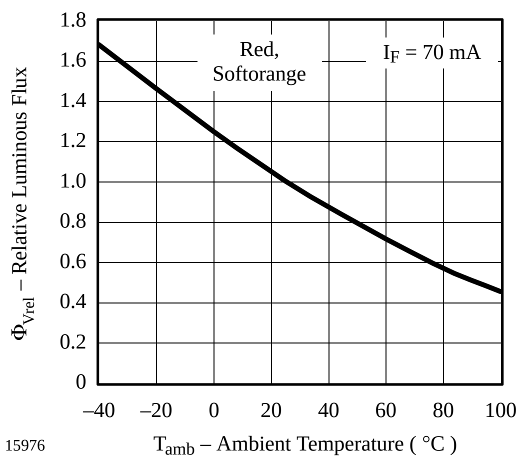


Figure 10 Rel. Luminous Flux vs. Ambient Temperature

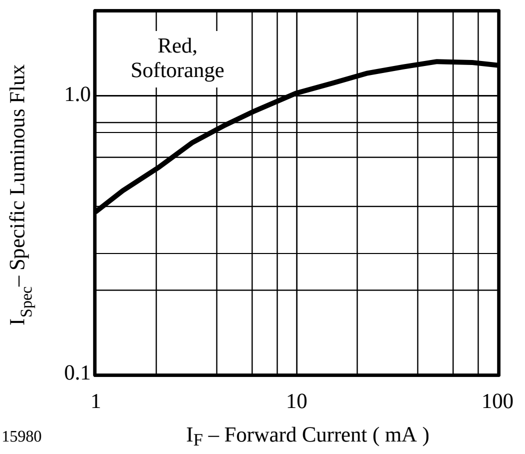


Figure 11 Specific Luminous Flux vs. Forward Current

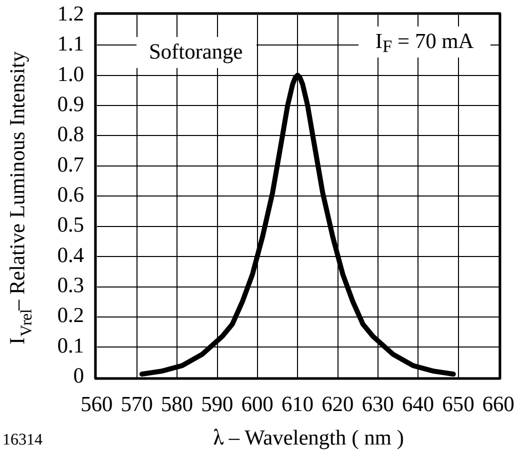


Figure 14 Relative Luminous Intensity vs. Wavelength

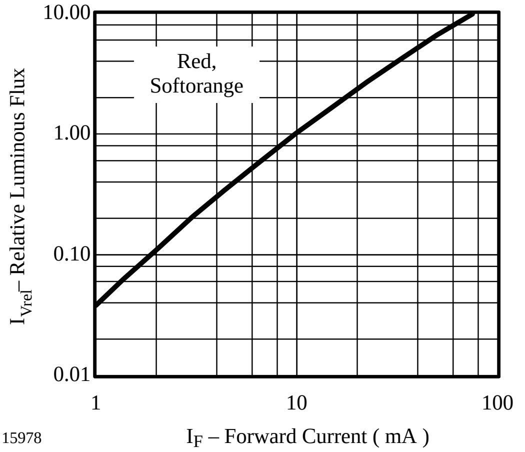


Figure 12 Relative Luminous Flux vs. Forward Current

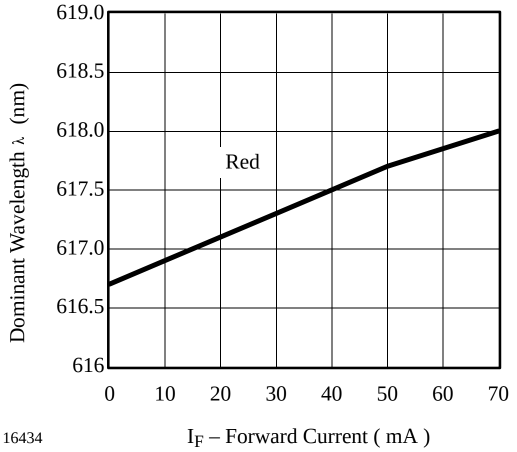


Figure 15 Dominant Wavelength vs. Forward Current

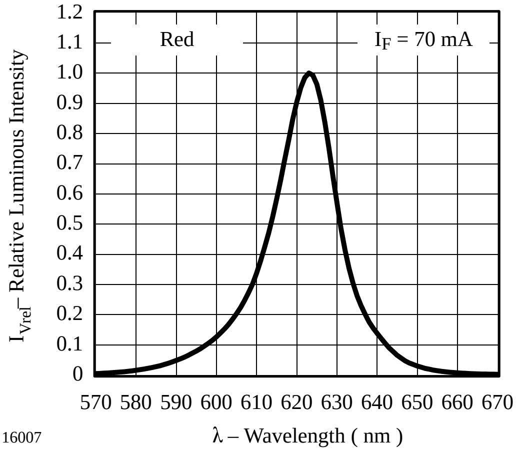


Figure 13 Relative Luminous Intensity vs. Wavelength

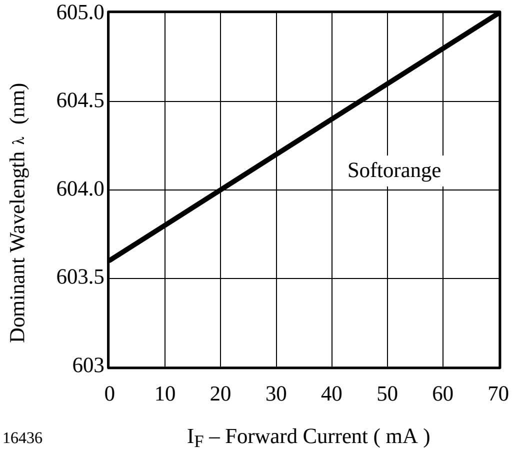


Figure 16 Dominant Wavelength vs. Forward Current

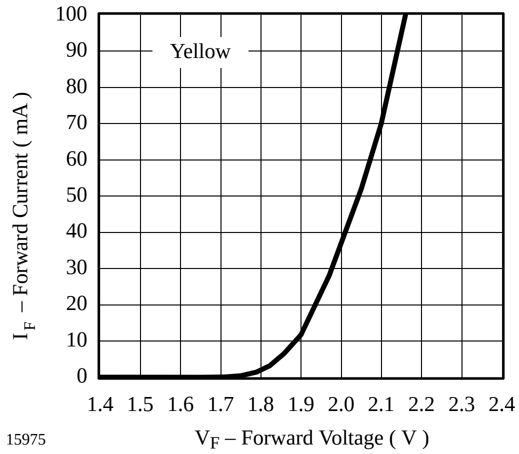


Figure 17 Forward Current vs. Forward Voltage

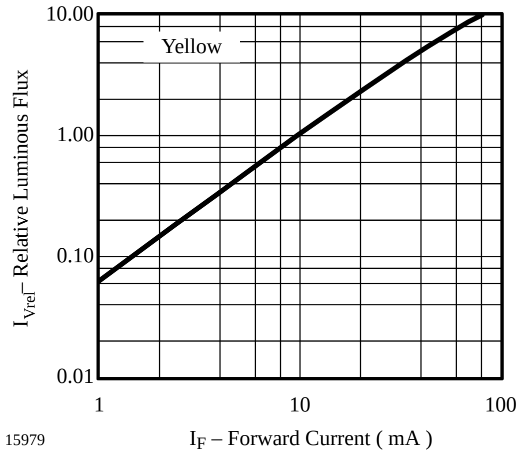


Figure 20 Relative Luminous Flux vs. Forward Current

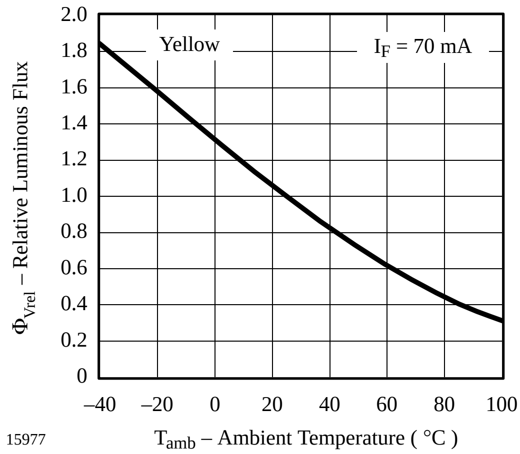


Figure 18 Rel. Luminous Flux vs. Ambient Temperature

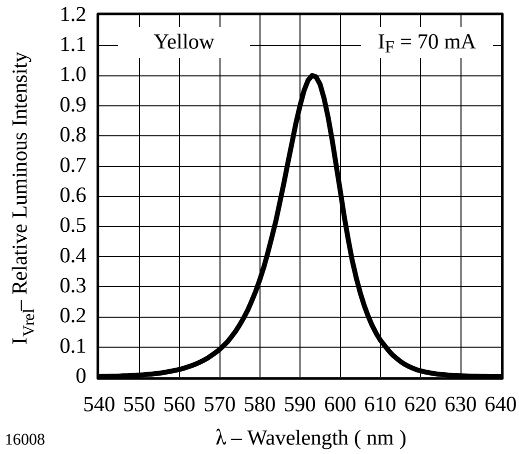


Figure 21 Relative Luminous Intensity vs. Wavelength

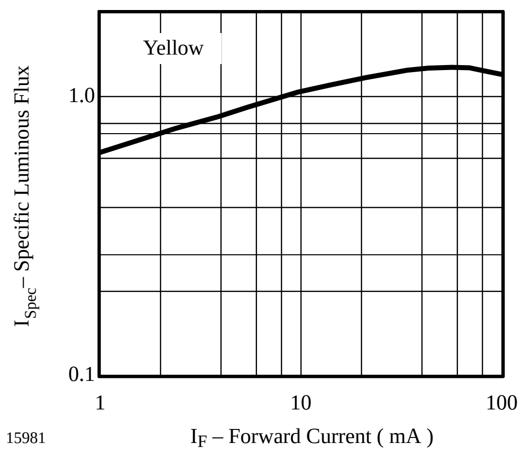


Figure 19 Specific Luminous Flux vs. Forward Current

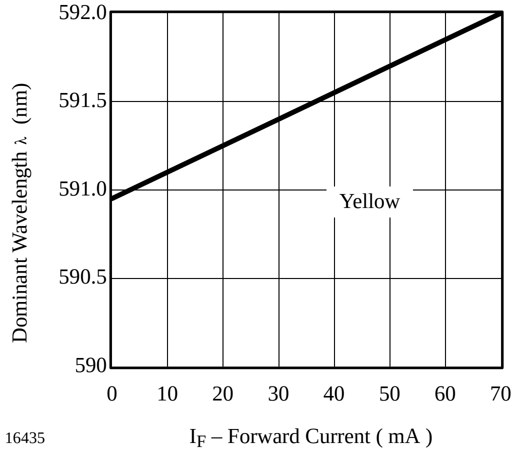


Figure 22 Dominant Wavelength vs. Forward Current

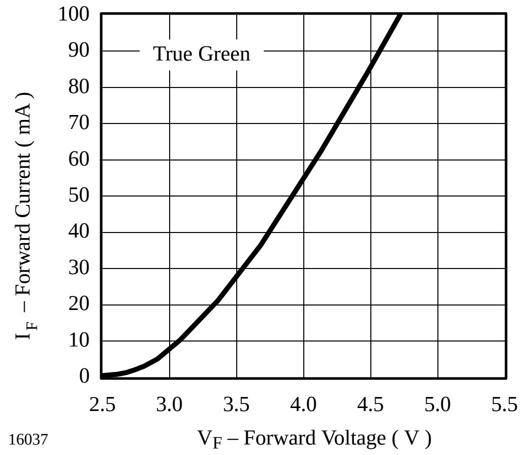


Figure 23 Forward Current vs. Forward Voltage

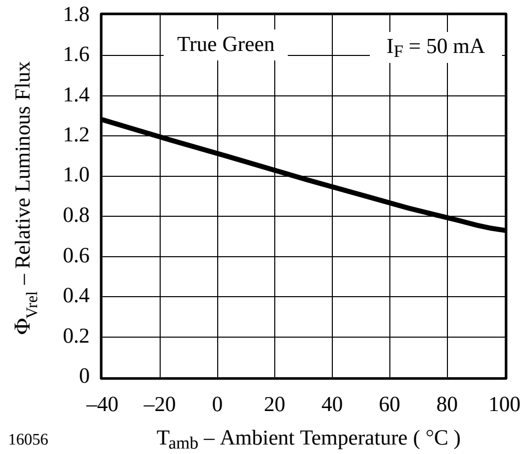


Figure 24 Rel. Luminous Flux vs. Ambient Temperature

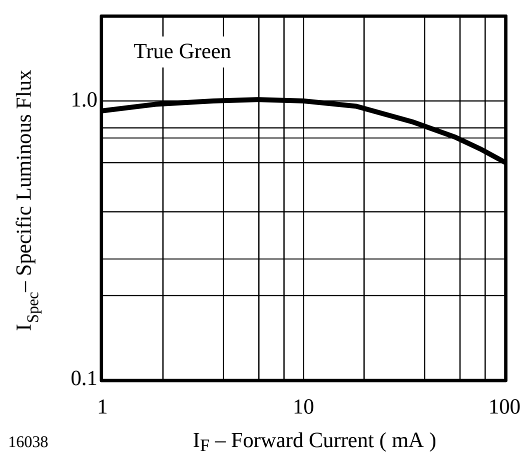


Figure 25 Specific Luminous Flux vs. Forward Current

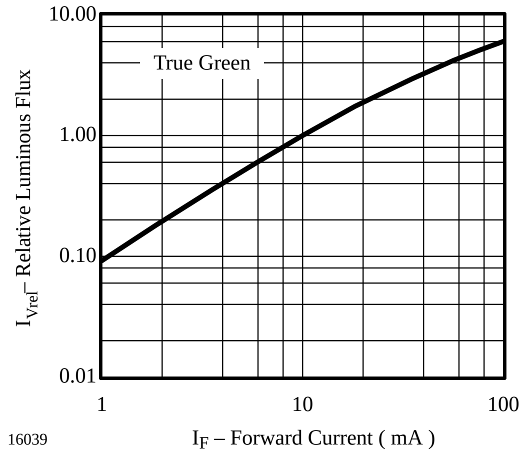


Figure 26 Relative Luminous Flux vs. Forward Current

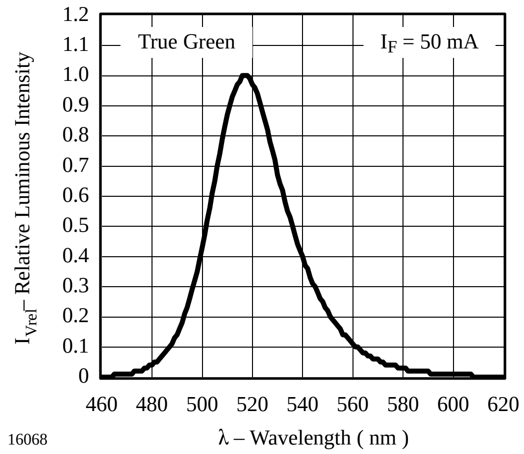


Figure 27 Relative Luminous Intensity vs. Wavelength

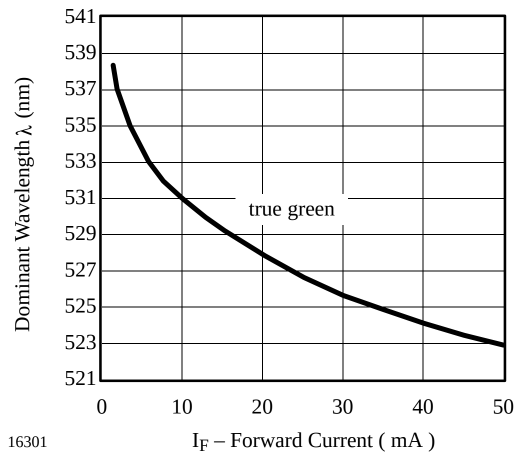


Figure 28 Dominant Wavelength vs. Forward Current

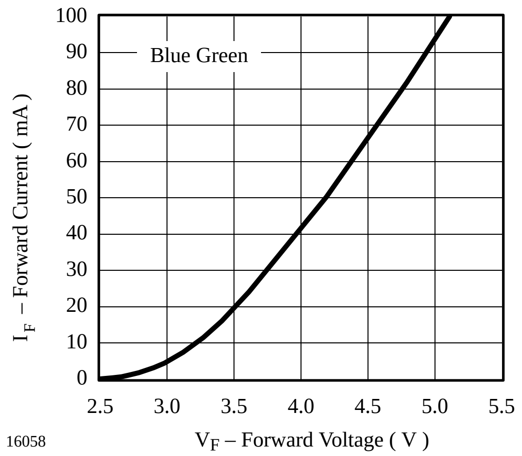


Figure 29 Forward Current vs. Forward Voltage

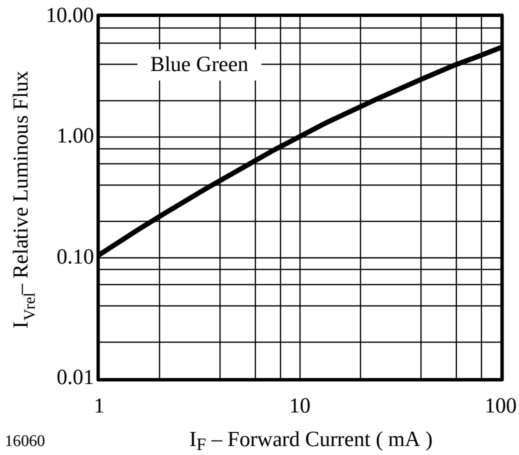


Figure 32 Relative Luminous Flux vs. Forward Current

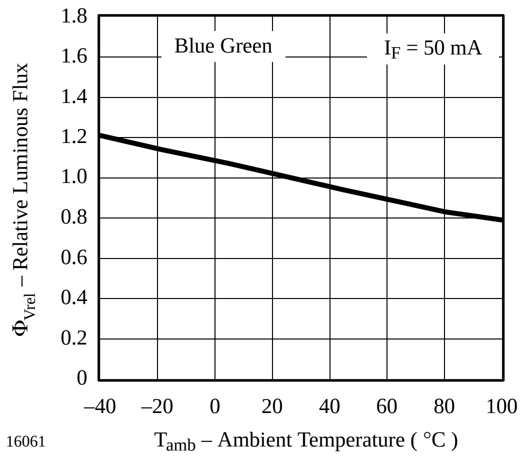


Figure 30 Rel. Luminous Flux vs. Ambient Temperature

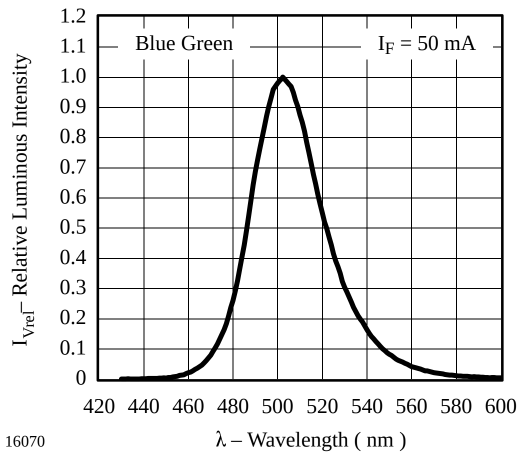


Figure 33 Relative Luminous Intensity vs. Wavelength

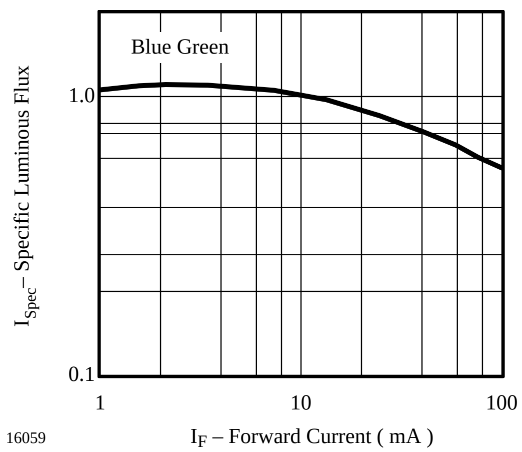


Figure 31 Specific Luminous Flux vs. Forward Current

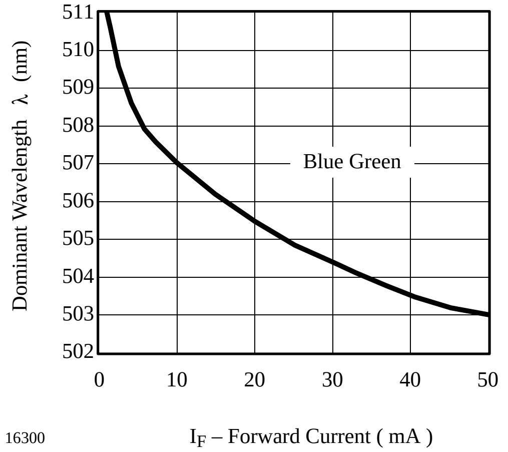


Figure 34 Dominant Wavelength vs. Forward Current

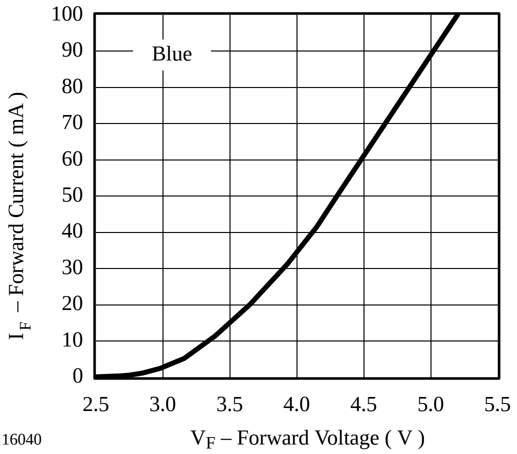


Figure 35 Forward Current vs. Forward Voltage

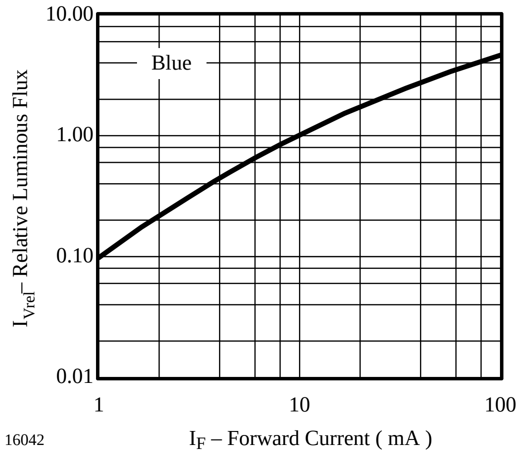


Figure 38 Relative Luminous Flux vs. Forward Current

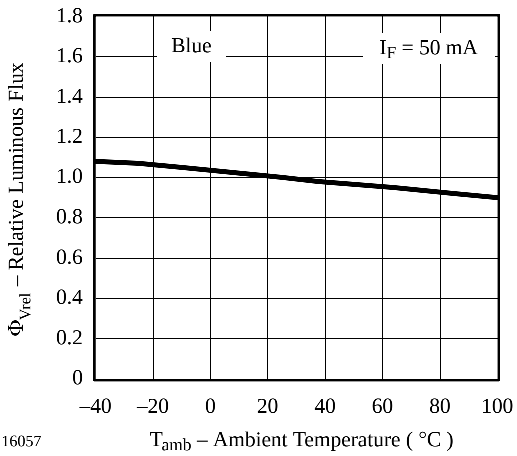


Figure 36 Rel. Luminous Flux vs. Ambient Temperature

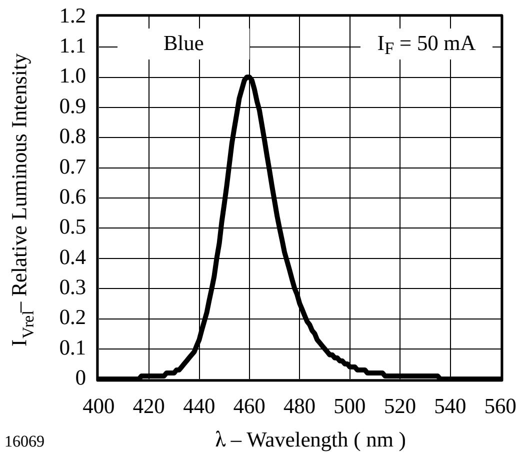


Figure 39 Relative Luminous Intensity vs. Wavelength

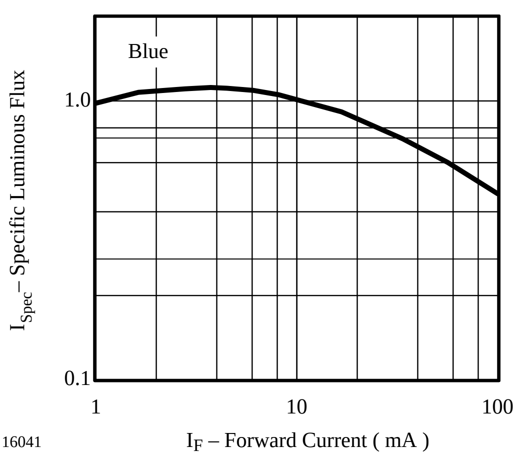


Figure 37 Specific Luminous Flux vs. Forward Current

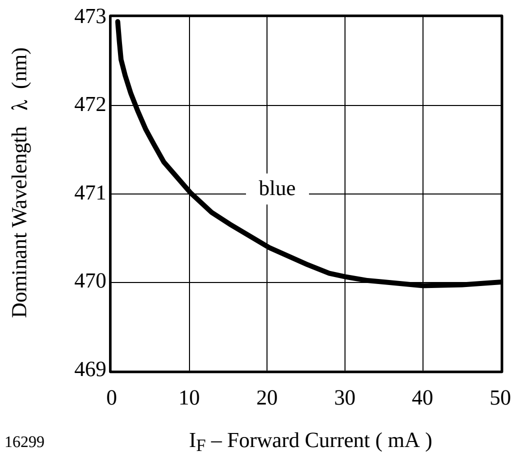


Figure 40 Dominant Wavelength vs. Forward Current

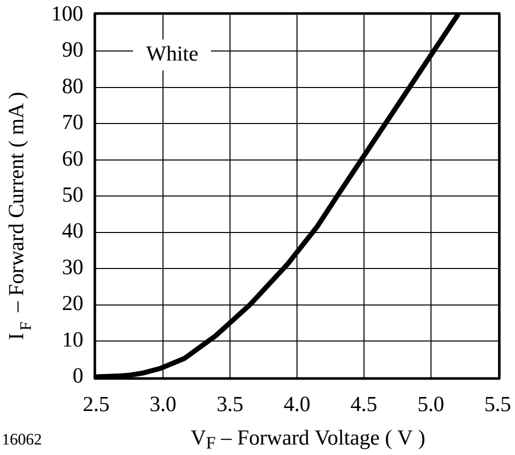


Figure 41 Forward Current vs. Forward Voltage

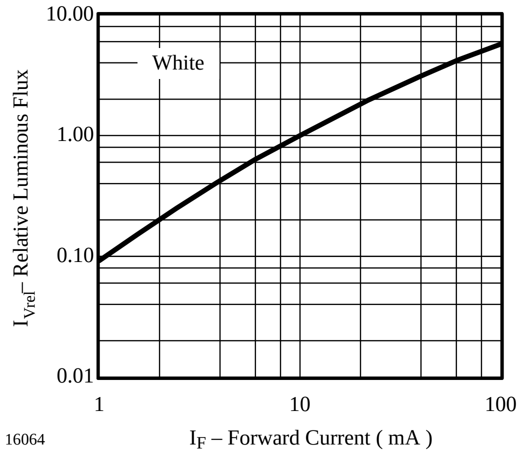


Figure 44 Relative Luminous Flux vs. Forward Current

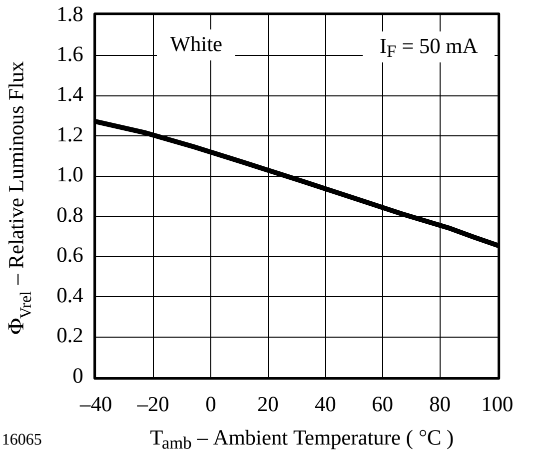


Figure 42 Rel. Luminous Flux vs. Ambient Temperature

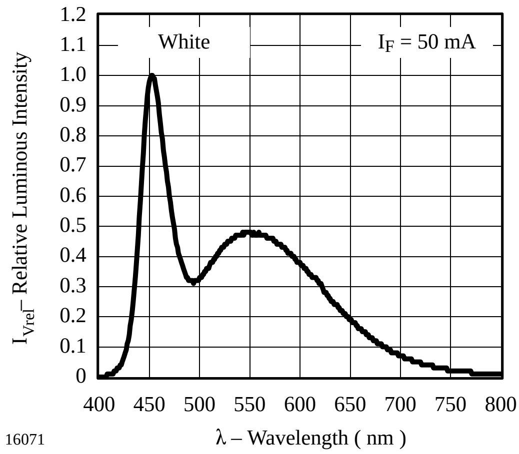


Figure 45 Relative Luminous Intensity vs. Wavelength

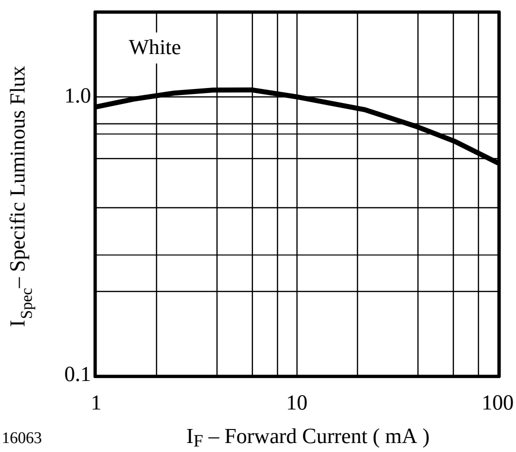


Figure 43 Specific Luminous Flux vs. Forward Current

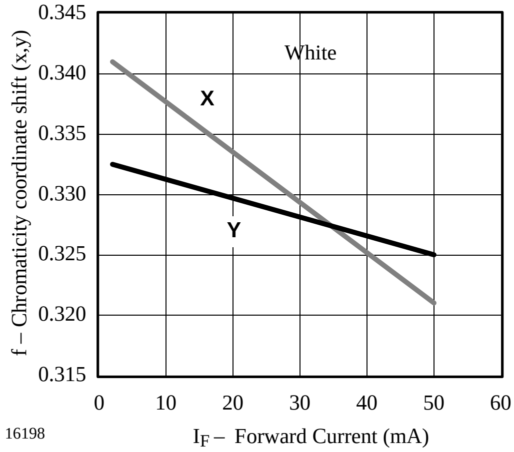
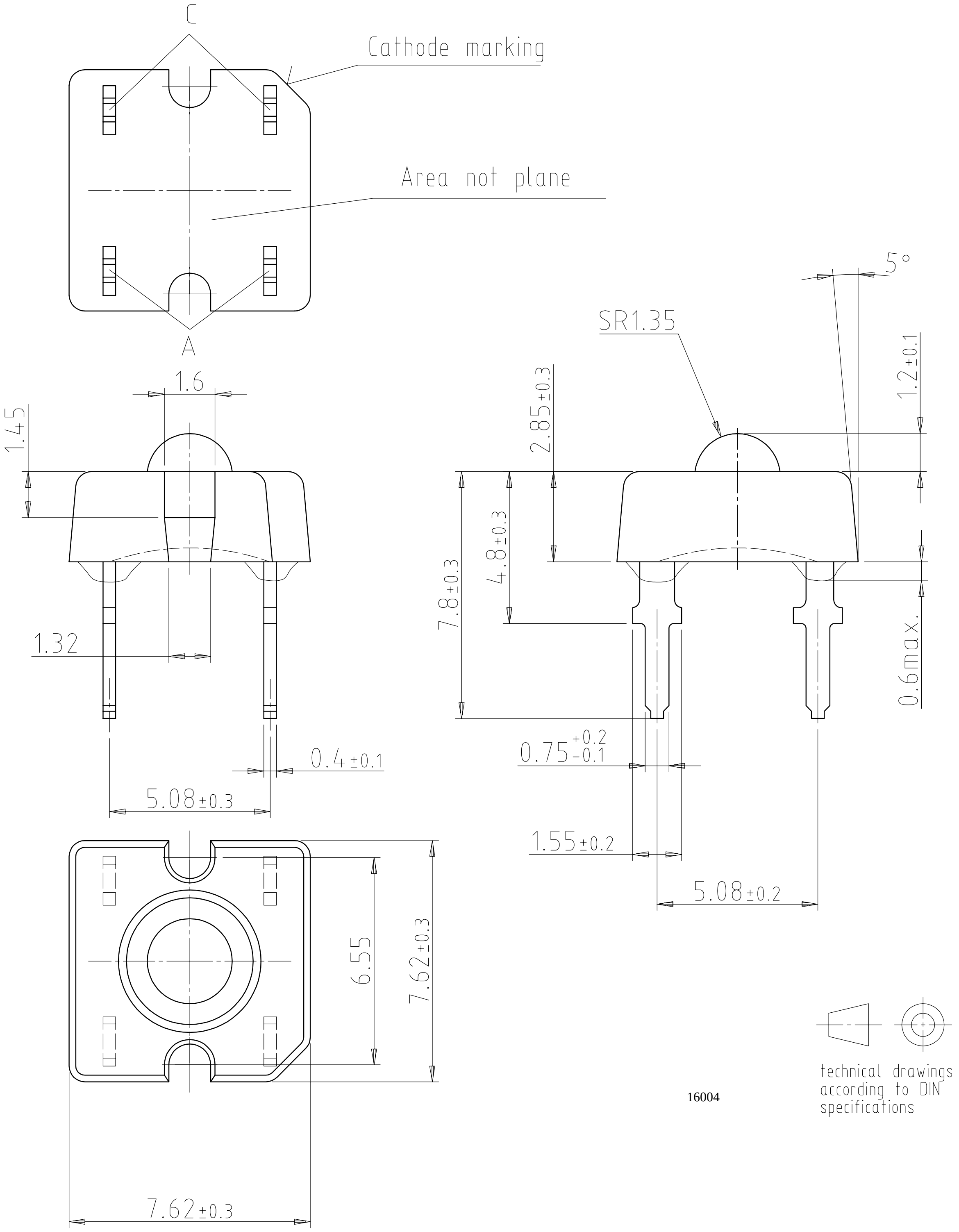


Figure 46 Chromaticity Coordinate Shift vs. Forward Current

Dimensions in mm



Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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